

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

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1. (Original) A computer-implemented method of searching a database for a prefix representing a destination address comprising:

loading two trees of tables, each tree of tables having a large table at a root branching to small tables; and

traversing the two tables of trees in parallel to find a match of an entry to the prefix.

2. (Currently Amended) The computer-implemented method of claim 1 wherein an entry comprises:

a router pointer representing the destination address; and

a pointer to a next small table.

3. (Currently Amended) The computer-implemented method of claim 1 wherein the small tables comprise:

prefix match fields for indexed table entries;

a population count of pointers; and

hidden prefix entries that hold shorter prefix route entry pointers.

4. (Original) The computer-implemented method of claim 1 further comprising reporting a non-match if the prefix does not match an entry.

5. (Original) The computer-implemented method of claim 1 wherein a first large table is a single 64k entry table that is indexed by bits 31:16 of an internet protocol (IP) address.

6. (Original) The computer-implemented method of claim 1 wherein a second large table is a single 256 entry table that is indexed by bits 31:24 of an internet protocol (IP) address.

7. (Original) The computer-implemented method of claim 5 wherein the small tables are dynamically allocated and comprise:

a tree with each node representing 4 bits of addresses covering an extension of 1-4 bits of a prefix entry from a previous tree.

8. (Original) The computer-implemented method of claim 6 wherein the small tables are dynamically allocated and comprise:

a tree with each node representing 4 bits of addresses covering an extension of 1-4 bits of a prefix entry from a previous tree.

9. (Original) A computer storage device storing a data structure for managing prefix representing internet protocol (IP) destination addresses, the data structure comprising:

two trees of tables, each tree of tables comprising:

a trie block, the trie block including a route pointer and a trie pointer;

a trie information structure, the trie information structure including masks and route entry pointers.

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Claims 10 -12 (Cancelled)

13. (Original) A computer program product, disposed on a computer readable medium, for searching a database for a prefix representing a destination address, the program comprising instructions for causing a computer to:

load two trees of tables, each tree of tables having a large table at a root branching to small tables; and

traverse the two tables of trees in parallel to find a match of an entry to the prefix.

14. (Original) The computer program of claim 13 wherein an entry comprises:

a router pointer representing the destination address; and  
a pointer to a next small table.

15. (Original) The computer program of claim 13 wherein the small tables comprise:

prefix match fields for indexed table entries;  
a population count of pointers; and  
hidden prefix entries that hold shorter prefix route entry pointers.

16. (Original) The computer program claim 13 further comprising instructions for causing the computer to report a non-match if the prefix does not match an entry.

17. (Original) The computer program of claim 13 wherein a first large table is a single 64k entry table that is indexed by bits 31:16 of an internet protocol (IP) address.

18. (Original) The computer program of claim 13 wherein a second large table is a single 256 entry table that is indexed by bits 31:24 of an internet protocol (IP) address.

19. (Original) The computer program of claim 17 wherein the small tables are dynamically allocated and comprise a tree with each node representing 4 bits of addresses covering an extension of 1-4 bits of a prefix entry from a previous tree.

20. (Original) The computer program of claim 18 wherein the small tables are dynamically allocated and comprise a tree with each node representing 4 bits of addresses covering an extension of 1-4 bits of a prefix entry from a previous tree.

21. (Original) The computer-implemented method of claim 3 further comprising:  
adding entries; and  
deleting entries.

22. (Original) The computer-implemented method of claim 21 wherein deleting entries comprises:

removing corresponding trie entries;  
decrementing the population counter;  
determining an entry next longest prefix; and  
inserting the next longest prefix in the trie.

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